LAWATAN
JABATAN KERJA RAYA (JKR)
KE TAPAK PROJEK SAMBUNGTARA TALIAN ATAS PULAU PINANG

06 JUNE 2024

275kV SUPPLY TO PENANG ISLAND

The new 275kV injection into Penang Island will take over the function of Gelugor Power Station where the scope includes :

a) **Construction of monopole towers on the sea for two circuits of 275kV Overhead Lines (1000 MVA each) from PMU New Prai 275kV – PMU The Light 275kV**

b) **Establishment of PMU The Light 275/132kV GIS (with 3x240MVA transformers)**

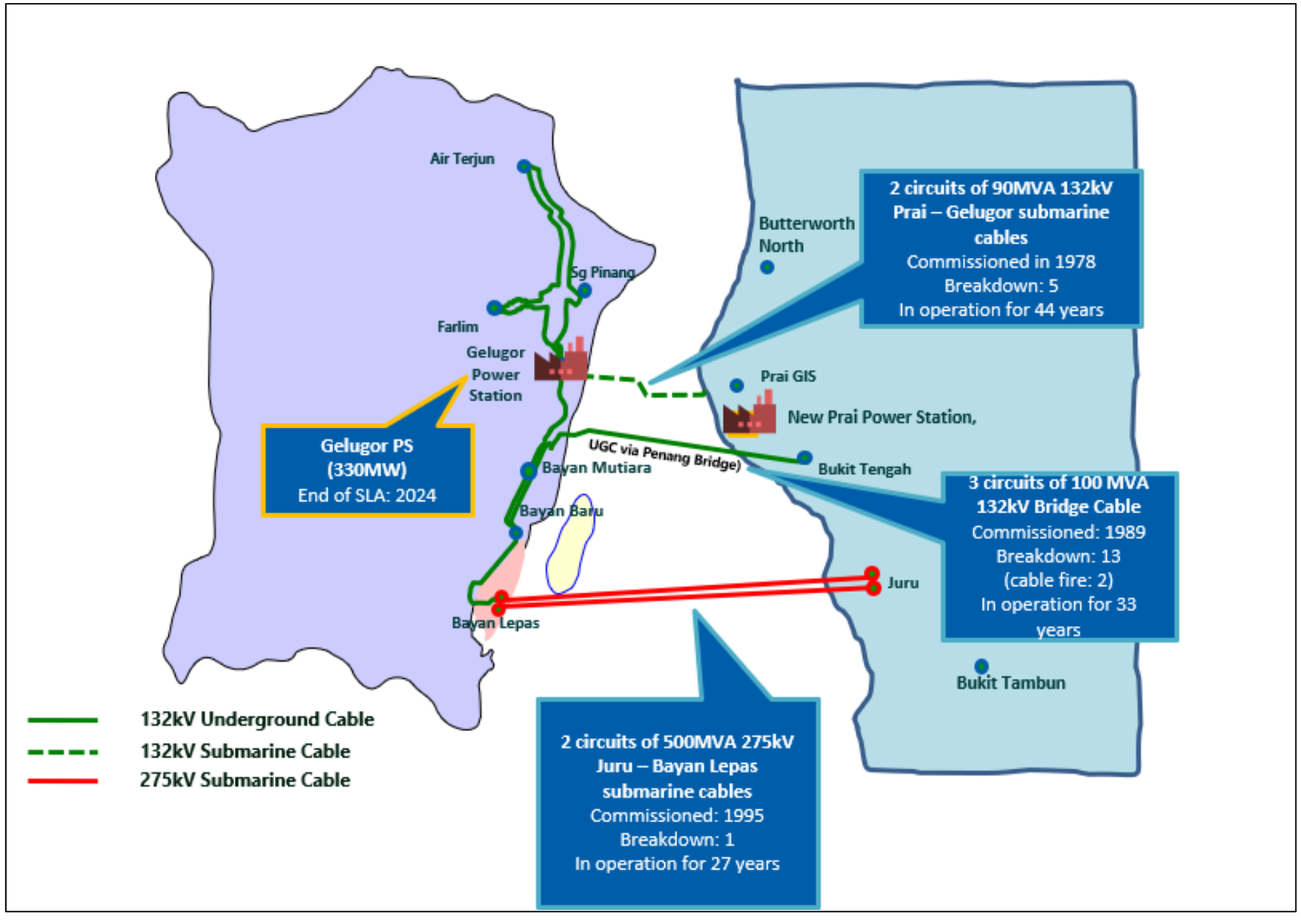
c) **2x275kV New Prai GIS Ext**

d) **Laying of 3 new circuits of 132kV underground cables (180MVA each) from PMU The Light – to PMU Gelugor**

e) **3x132kV Gelugor GIS Ext**

EXISTING 275KV & 132KV SUPPLY TO PENANG ISLAND

The demand for electricity in Penang island is presently supported by a mix of local generation, i.e. Gelugor Power Station and high voltage 275kV and 132kV transmission cables from Seberang Perai.



275kV SUPPLY TO PENANG ISLAND

- Penang Island recorded peak demand of 744 MW on **20th April 2016**.
- It is presently supplied through;

No	Type of Supply Source	Capacity	* Operating Age
1	Local Generation @ Gelugor Power Station #	330MW	> 21 years
2	275kV Juru to Bayan Lepas (Submarine)	2 x 500MVA	~29 years
3	132kV SKS Prai to Gelugor (Submarine)	2 x 90MVA	~46 years
4	132kV B.Tengah to Bayan Mutiara (Bridge Cable)	3 x 100MVA	~35 years

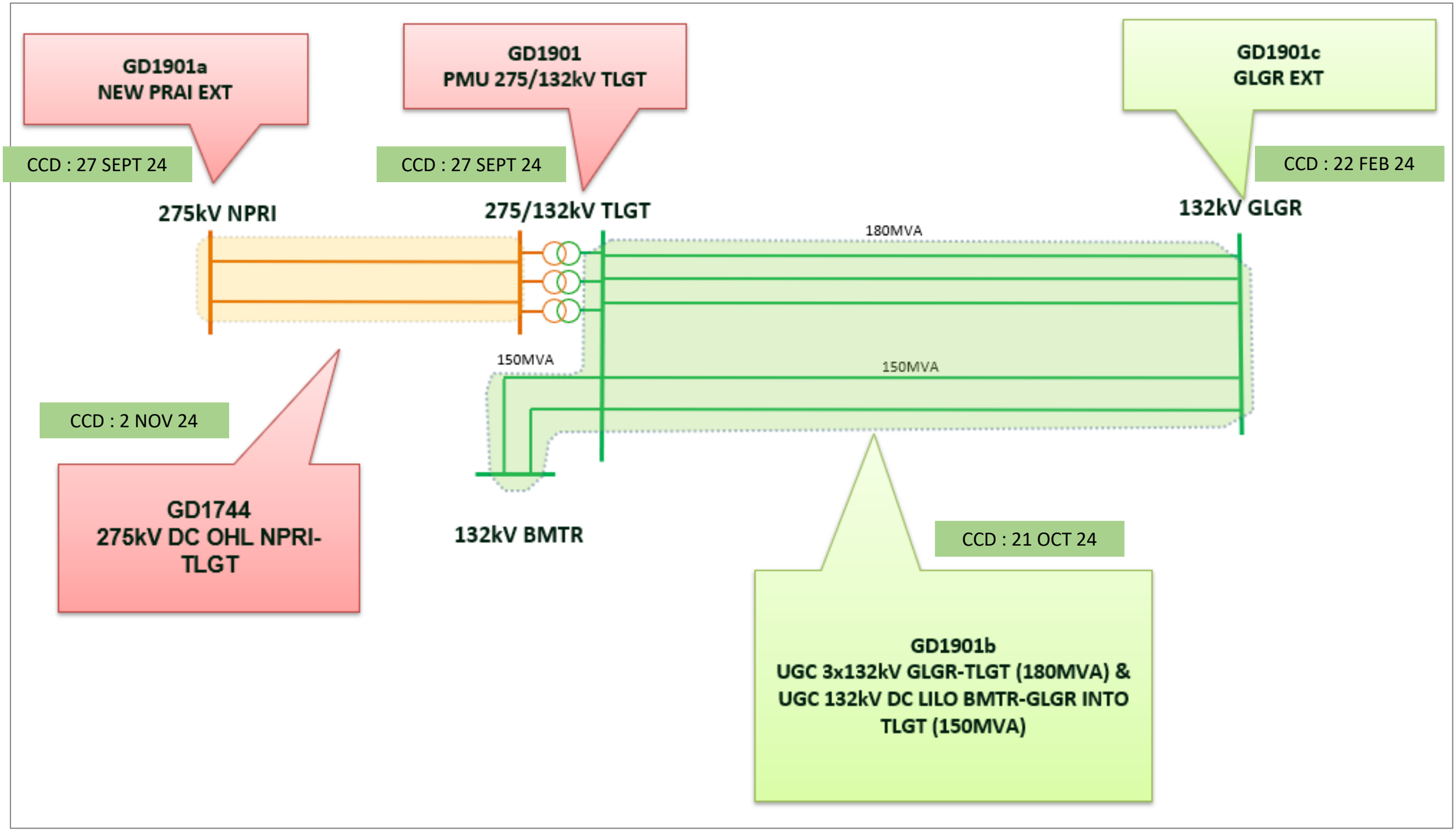
Note : #

1. Gelugor Power Station is less efficient plant compared to other plants in the system. Thus, it is more expensive to generate and rank lower in generator merit order.
2. However, the plant will always be in operation to maintain supply security to Penang island.
3. The plant will be retired on **31st August 2024**

Note: *

1. Retirement age for Generator – **21 years**
2. Retirement age for UG cables – **40 years**
3. Retirement age for Submarine cables – **35 years**

SINGLE LINE DIAGRAM

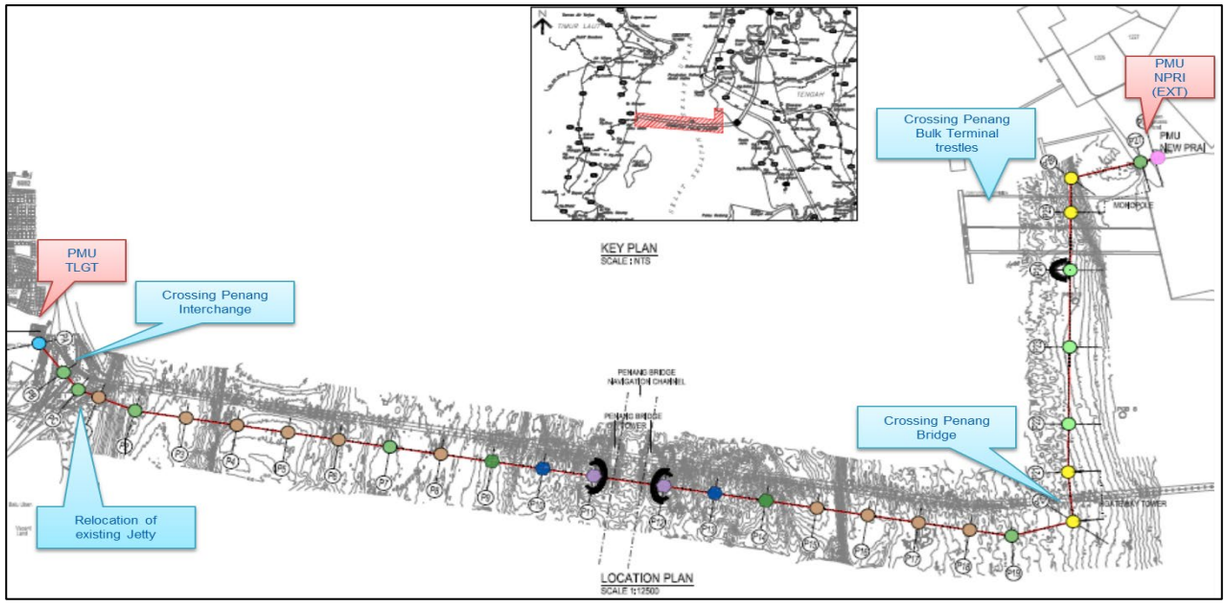


275KV TRANSMISSION LINE DEVELOPMENT PROJECT FROM OHL NPRI TO PMU TLGT

275kV TRANSMISSION LINE DEVELOPMENT PROJECT FROM PMU NEW PRAI TO PMU THE LIGHT

Project has been awarded to Multi Discovery Sdn. Bhd. – KACC Construction Sdn. Bhd. – CHEC Construction Sdn. Bhd. JV on 12 November 2021 with Contract Completion Date on 22 August 2024 (EOT No.1 until 2 November 2024).

The Double Circuit of 275kV Transmission Line from PMU New Prai to PMU The Light consist of 31 nos of monople tower with a distance approximately 8.5km.



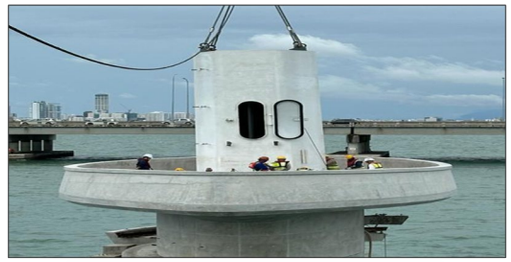
- Gelugor Power Station is expected to cease operation when its Service Level Agreement (SLA) expires.
- The **132kV submarine and bridge cables have aged** and have been in operation for more than 30 years.
- In the past, **these cables have tripped and caused severe supply interruption** to customers in Penang island.
- To **ensure supply security to customers in Penang** in view of the retirement Gelugor Power Station, TNB has planned for a **new 275kV injection into the island via 2 circuits of 1000MVA transmission lines** from PMU 275kV New Prai in Seberang Perai to PMU The Light 275kV in the island

Six (6) Iconic Towers (Areca Nuts @ Buah Pinang shape) and Twenty-Five (25) Monopole Tower will be constructed with varying heights.

Soil Investigation Work

Piling Work

Pile Cap Installation

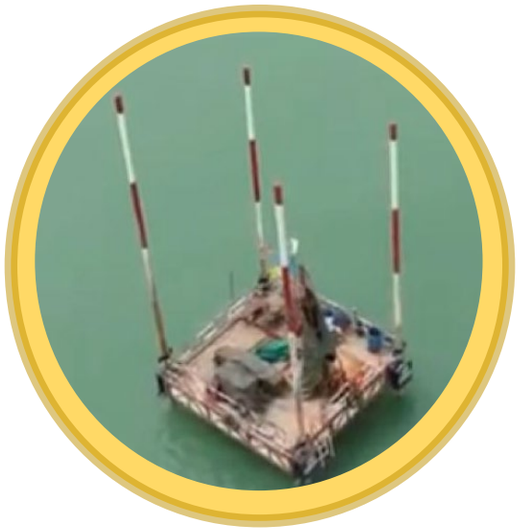


Tower Erection

275kV TRANSMISSION LINE DEVELOPMENT PROJECT FROM PMU NEW PRAI TO PMU THE LIGHT

TENAGA NASIONAL

KEY ACTIVITIES



Soil Investigation

Piling works

Pilecap launching

Tower erection

Stringing works

275kV TRANSMISSION LINE DEVELOPMENT PROJECT
FROM PMU NEW PRAI TO PMU THE LIGHT

TENAGA NASIONAL

ILLUSTRATION

ACTUAL

275kV TRANSMISSION LINE DEVELOPMENT PROJECT
FROM PMU NEW PRAI TO PMU THE LIGHT

TENAGA NASIONAL

ILLUSTRATION

ACTUAL

ICONIC TOWER

ILLUSTRATION

ACTUAL

MONOPOLE TOWER

ILLUSTRATION

ACTUAL

THANK YOU